

EPA Hydraulic Fracturing Study

Input to Initial Design of EPA Research Study

from

Seneca Lake Pure Waters Association

March 27, 2010

Who are we?

This document provides comments on the “Initial Design of EPA Research Study on Potential Relationships Between Hydraulic Fracturing Water and Drinking Water Resources” as posted on the EPA website¹, on behalf of the Seneca Lake Pure Waters Association (SLPWA). Our association of over 270 members represents property owners and residents in the Seneca Lake watershed. Seneca Lake is the largest of the eleven Finger Lakes that make up a complex system of lakes and rivers in central New York State known as the Oswego River Basin. Keuka Lake, an adjoining Finger Lake, and flows into Seneca Lake and in combination these two lakes provide drinking water for over 100,000 residents. The Finger Lakes region has an economy based on all forms of agriculture, small manufacturing, mining (salt), wine-making, recreation and tourism. The latter three businesses have been growing substantially in recent years. Seneca Lake alone now supports over 50 wineries.

Our association was formed in 1991 to promote the understanding, preservation and improvement of the water quality, natural habitat and general environmental conditions of Seneca Lake and its watershed. The association supports scientific research, collects, preserves, publishes and disseminates information concerning Seneca Lake and its watershed and encourages and supports the enforcement of laws, regulations and patterns of development and technology aimed at preserving and enhancing the water quality of the lake. The association’s website at <http://www.senecalake.org/> carries current information regarding its activities. This document which comments on the “Initial Design of EPA Research Study on Potential Relationships Between Hydraulic Fracturing Water and Drinking Water Resources” will be posted on that website along with a link to relevant EPA documents to inform our members and the interested public of the association’s position.

SLPWA supports environmentally and fiscally responsible drilling for natural gas. SLPWA opposes drilling, particularly using the hydraulic fracturing (HF) technology for natural gas, under the vague guidelines and monitoring described in currently available regulatory documents such as New York State Department of Environmental Conservation’s (DEC) Generic Environmental Impact Statement on the Oil, Gas and

1

<http://yosemite.epa.gov/sab/SABPRODUCT.NSF/b5d8a1ce9b07293485257375007012b7/3b745430d624ed3b852576d400514b76!OpenDocument>

Solution Mining Regulatory Program (GEIS)² and draft Supplemental Generic Environmental Impact Statement (SGEIS)³.

SLPWA believes that regulations and monitoring processes must be explicit in an improved New York State DEC document in order to insure that HF, from beginning to end, can be done without risk to: (1) the environment (air, water, noise), (2) the infrastructure (counties and municipalities), (3) the local property tax burden, (4) the Finger Lakes expanding economic base (tourism, wineries, recreation) and (5) the individual property owner.

New York State DEC and Federal EPA regulations must assure the safety of the HF process to our water, air and communities. That is the mission of these agencies^{4,5} and the moratorium on drilling in New York State should continue until such laws and regulations are in place and supported by the general public.

As a constructive step in the process of providing guidelines for environmentally and fiscally responsible drilling in the Marcellus Shale deposits of New York State (and elsewhere for that manner) our association has drafted and circulated a set of minimum requirements for such drilling, a copy of which is attached to this document as Attachment A. This set of requirements was issued on February 4, 2010 and copies were sent to EPA Secretary Lisa Jackson and EPA Region 2 Administrator Judith Enck. We received a very positive acknowledgement of this document from Ms. Enck⁶ (Attachment B).

Background of this Study

The socio-political background of the study EPA is undertaking is very highly charged. On one hand, there are powerful lobbies from the oil, gas and drilling companies that are looking to this study for approval of HF technology. Some of these companies continue to quote the results of the 2004 EPA study⁷ as concluding that HF as it is practiced today in recovering gas from shale in Wyoming, Colorado, Texas, Pennsylvania, West Virginia and New York has EPA approval. In fact, the second document that has been provided

² <http://www.dec.ny.gov/energy/45912.html>

³ <http://www.dec.ny.gov/energy/58440.html>

⁴ <http://www.dec.ny.gov/about/511.html>

⁵ <http://www.epa.gov/epahome/aboutepa.htm>

⁶ Attachment B, February 26, 2010 letter from Judith Enck

⁷ Evaluation Impacts to Underground Sources of DW by HF of Coalbed Methane Reservoirs. (PDF, 1 pp., 12,672 bytes)

to the committee⁸ leads one to believe that the regulation of HF for drilling in shale deposits is adequate, when in fact; the oil and gas industry has been excluded from a number of regulations including the Safe Drinking Water Act⁹. It should be noted that the document supplied to the committee was written under the sponsorship of a trade organization of the oil and gas industry.

On the other hand, there are environmental and scientific groups that discount the 2004 EPA study as being inadequate and flawed, thus the conclusions drawn about HF based on that study are not valid. Beyond questioning the earlier EPA study's validity, environmentalists have produced considerable information that provides referenced anecdotal information and facts that indicate that HF has serious environmental problems associated with it. Some of these may be inherent to the processes, others perhaps the result of accidental misuse of the processes. This does not diminish the fact that there have been serious problems associated with this technology in water, air and noise pollution. The films "Split Estate"¹⁰ and "Gasland"¹¹ contain examples of such problems. We have enclosed an interview of Josh Fox, the producer of the film "Gasland" by David Brancaccio on the PBS television program "NOW" which is objective and well-done.¹²

The foregoing suggests that this study needs to be carried out with great awareness of the multiplicity of issues both socio-political as well as scientific in arriving at conclusions and recommendations. In fact, given this highly charged study environment, we would suggest that it might be more appropriate for this study to be carried out by an organization that has a reputation of independence from outside influence such as the National Academies rather than an agency of the government that has political leadership. The 2004 EPA study was undoubtedly carried out with complete scientific integrity; however, it is not lost on the public that in 2005, the so-call Halliburton Loop Hole¹³ was passed by Congress shortly after the results of this study were issued. Were the two events connected?

⁸ Modern Shale Gas, Development in the United States: A Primer

⁹ "Safe Drinking Water Act Should Cover Hydraulic Fracturing", Earthworks, <http://www.earthworksaction.org/publications.cfm?pubID=402>

¹⁰ "Split Estate", Red Rock Pictures, 2010, <http://www.splitestate.com/>

¹¹ "Gasland", a documentary film. <http://www.gaslandthemovie.com/>

¹² PBS Program "Now", recorded 10:30 PM March 26, 2010, WXXI.

¹³ New York Times, November 3, 2009 (Attachment C)

The chairman of your committee is a member of the National Academy of Engineering and there are several other members, including a second NAE member, who have served on National Academies study committees. They will probably all agree that the process that the National Academy uses to conduct its studies scrupulously works at balancing biases in the make up of study committees and spends much effort at avoiding even the hint of political influence on the outcomes of its studies. While our association appreciates the impressive talent that EPA has assembled for this study, we are concerned that whatever the outcome, the study results will be questioned by the public because of its sponsorship by a politically-led organization. We emphasize again that this important study is not purely technical. The socio-political dimension must be considered in structuring the study so that its results will be supported by the public as being totally objective.

Scope of this Study

Indicative of how subtly such bias can creep into a study, is the opening statement in the introduction of the “Scoping” document which states: “Natural gas plays a key role in our nation’s clean energy future...” As written, this statement is misleading since it implies that natural gas is “clean”. While natural gas has reduced carbon dioxide emissions for a given BTU output, it is considered by many as a transition step while truly renewable energy sources are developed and come online. It would be more accurate to state: “Natural gas will play a role in the nation’s strategy to move to a clean energy future. The process known as hydraulic fracturing (HF) is one way of accessing this important resource.”

While it is clear that the primary focus of this study will be the “potential relationship between hydraulic fracturing and drinking water resources”, this study should not be carried out in isolation of the larger picture. An important dimension to this study which is not evident in your scoping document should be an assessment of the potential impact of the HF process on the environment vs. the impact of reduced carbon dioxide emissions through the use of natural gas. Is this a favorable or unfavorable trade-off?

The detailed scientific scope of the study as outlined in your document¹ is impressive and will be challenging to accomplish in the time allotted for this study.

There are some details in the scoping document which may change as your study progresses. For example, your reference on page 1 to the quantities of water used in

hydraulic fracturing of wells states “up to 5 million gallons per well”. We have seen estimates ranging as high as 9 million gallons and the New York State DEC DRAFT SGEIS document³ uses a range of up to 7.8 million gallons.

Page 2. Reference is made to the fact that, “potential HF impacts on other water resource functions, such as supporting aquatic ecosystems and recreational activities, will also be considered”. It is also important to include in these considerations economic activities that depend on clean water. In addition to the obvious drinking water supplies, water supplied for the agri-businesses including cattle, dairy, crops, institutions of higher learning, vineyards and wine-making, all of which are significant economic drivers in the Southern Tier of New York State, an area located above the Marcellus Shale.

Additionally, there are recreational businesses that depend on fresh, clean lakes and water which could be seriously impacted by HF. These include the obvious swimming, boating, fishing and tourist support services. The Southern Tier economy of New York State depends heavily on such activities today and is growing. A visit by your committee to Dimock, PA where HF is in “full bloom” would provide the contrast with our present situation in the Finger Lakes. The view of Dimock, PA as potentially what could happen to the Finger Lakes area of New York terrifies the businesses and public in our area.

Page 8 We agree that modeling studies can provide important tools to understanding the interaction of various parameters that influence the transport of groundwater. However, models for predicting groundwater behavior in complex geologic structures do not exist. This is an area that requires considerable research. Recently, Chesapeake Energy applied for a permit to use an existing, non-producing gas well in the Town of Pulteney, New York, as an injection well for the disposal of up to 180,000 gallons per day of hydraulic fracturing flowback water for a period of 10 years¹⁴. This well was within 3000’ of one the Finger Lakes, Keuka Lake that flows into Seneca Lake. Both lakes supply approximately 100,000 people with drinking water. The permit application contained a modeling study by a consulting company from Oklahoma which did not apply to the type of geology extant in the Town of Pulteney, but was for an idealized permeable substrate. The complexity of the Finger Lakes geology can be seen during

¹⁴ Underground Injection Control Program, Class IID Injection Well Permit Application Bergstresser Well API No. 31-101-21710, Steuben County, New York, Submitted by: Chesapeake Appalachia LLC, 900 Pennsylvania Avenue, Charleston, West Virginia 25302 Submitted to: Underground Injection Contr91 Program United States Environmental Protection Agency, Region II 290 Broadway, 20th Floor, New York, New York 10007

wintertime along the lakes shorelines. These show water “oozing” (fixed as ice) out of the walls of sedimentary rock. Groundwater in this geology does not move in idealized ways, but every-which-way along cracks, fissures and potentially along hydraulic fractures. We are not convinced that computer-aided modeling of the geology in New York State is enough of a science today to provide confidence in its predictions.

Concluding Statement

The SLPWA is pleased that EPA is undertaking the study of HF and would like to support these efforts in any way we can. The foregoing comments are provided in the spirit of constructive criticism. We will follow your study with interest and stand ready to provide you with any information that you request from our vantage point and experience base. Thank you for the opportunity of providing input into your first meeting.



Proposed Minimum Requirements for the Protection of the Seneca Lake Watershed

Our association of over 270 members represents property owners and residents in the Seneca Lake watershed. It was formed in 1991 to promote the understanding, preservation and improvement of the water quality, natural habitat and general environmental conditions of Seneca Lake and its watershed. The association supports scientific research, collects, preserves, publishes and disseminates information concerning Seneca Lake and its watershed and encourages and supports the enforcement of laws, regulations and patterns of development and technology aimed at preserving and enhancing the water quality of the lake. The association's website at <http://www.senecalake.org/> carries current information regarding its activities.

In our comments on the dSGEIS issued by the New York State Department of Environmental Conservation, Seneca Lake Pure Waters Association stated that we support fiscally and environmentally responsible drilling for natural gas. SLPWA opposes drilling for natural gas under the vague guidelines described in NYS DEC's dSGEIS issued on September 30, 2009.

This document defines what our association means by "fiscally and environmentally responsible drilling" and what it believes to be minimum requirements to protect the water resources of New York State, including the Seneca Lake watershed, as industrial and natural resource development occurs throughout the state. While this set of minimum requirements is written with the near-term prospect of drilling for natural gas in the Marcellus Shale, these requirements are intended to be long-term in scope and the principles behind these requirements should apply to other types of future development activities in our watershed.

Basic Assumptions

As applied to the drilling for natural gas, the basic assumptions in this document are the following: Significant portions, if not all, of our watershed is located above a portion of the Marcellus Shale formation, a low-permeability rock formation estimated to contain very significant reserves of natural gas. Recent technological developments including horizontal drilling and high-volume hydraulic fracturing have enabled energy exploration companies to exploit this resource in the Seneca Lake watershed and such exploration could potentially present some businesses, communities and individuals with financial benefit.

The development of the natural gas resources in the Marcellus Shale play requires the use of drilling and well stimulating technology involving both horizontal drilling and hydraulic fracturing of the shale layers. The process of hydraulic fracturing involves the use, retention and disposal of millions of gallons of fracturing fluid and wastewater that is high in dissolved solids and is likely to contain toxic and radioactive materials. The proprietary drilling formulations are

not subject to public disclosure requirements and therefore present an unknown hazard in these drilling operations.

Our association's concern is that the aforementioned potential financial benefits could easily be offset by short and long-term environmental liabilities should development of natural gas resources be allowed to continue in a largely unregulated manner. The impact on the environment could present unforeseen damage to the Upstate economy, including the tourism, wine, agricultural and educational industries.

The water resources in the State of New York are our most precious natural resources far outstripping any other natural resources in importance for the future well-being of the State and its people. Not only is this resource absolutely essential for the health and welfare of its residents and their occupations, it also represents important value to the state's attractiveness as a year-round recreational area.

The recently published draft Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program (dSGEIS), September, 2009 by the New York State Department of Conservation was judged by our association as well as by many others throughout the state, as providing inadequate regulatory control of the proposed drilling for natural gas throughout the state. These proposed regulations, coupled with inadequate staff resources of the NYSDEC Division of Mineral Resources, Bureau of Oil and Gas Regulation to manage current drilling activities in New York State raise serious concern about the future of our water resources and environment.

Minimum Requirements

The following points define what our association would find as minimally acceptable requirements for the protection of the environment of the Seneca Lake watershed which is the prime mission of our association.

1) New York Water Resources Protection Act (NYWRPA)

The New York State Legislature and Governor should enact a New York State Water Resources Protection Act (NYWRPA), as urged by a large number of environmental groups throughout the state, that reflects the State's continued commitment to water resource protection and serves as a general directive to the Department of Environmental Conservation (DEC). This legislation should grant the DEC the authority to regulate current and projected water uses (and associated activities) so that the agency may adequately prepare for future impacts to protect our valuable water resources.

Specifically the bill should set forth the following principles:

- i) The state's obligation to hold both its ground and surface water resources in public trust and to protect them for the long-term benefit of its people;
- ii) The state's obligation to preserve water for essential uses at a higher priority than nonessential uses. Essential uses include high quality drinking water sources, wetlands, wildlife habitat and other important ecological systems;
- iii) The right of every New Yorker to safe, clean, sufficient, and affordable water;

- iv) The need to maintain adequate water flows and levels to protect fish, wildlife and other natural resources;
- v) The need to safeguard and enhance opportunities for recreational use of state waters;
- vi) The need to preserve the aesthetic values of our lakes and waterways.
- vii) The need to protect existing private water uses that are dependent upon surface water flows;
- viii) Recognize that the state's surface and ground waters are public trust resources and that water withdrawals will be governed based upon the concept of sustainable yield (as defined in the statute) and by DEC implementation of regulations based on NYWRPA.
- ix) Establish a permit application process that applies to persons or organizations seeking to withdraw water greater than 50,000 gallons in any 24 hour period from one or more sources of surface or groundwater sources in New York State. The permitting process should establish the importance, priority and ultimate fate of the water that is withdrawn consistent with the principles defined in the NYWRPA.
- x) Approval of permits to withdraw water greater than 50,000 gallons in any 24 hour period will be determined by detailed DEC criteria and regulations that meet the spirit of the principles laid out in NYWRPA. Such permits will have a maximum term of 5 years provided there are no violations of the permit.
- xi) The legislation should mandate that all permit applications contain a mandatory water conservation program for the use of the water that is proposed to be withdrawn that addresses best water management practices. The permit should include monitoring requirements and regular course-of-business record keeping and monthly reporting to the DEC of water withdrawals. The DEC should be given discretion to require an applicant pay the expense of third-party monitoring (selected by DEC) to ensure compliance with all permit conditions throughout the life of the permit.
- xii) The legislation should include provisions for private rights of action, including the right to seek attorney's fees should it become necessary for citizens to enforce permit requirements and limits.
- xiii) The legislation should provide that following the submission of a water withdrawal permit application and a preliminary determination by DEC the agency will post the application online for 60 days to allow for public comment. Following public input, the Commissioner of DEC will issue a draft water withdrawal permit and provide an additional public comment period of 60 days followed by a public hearing on the draft permit (additional adjudicatory hearings if necessary) consistent with the requirements of 6 NYCRR part 624.4.
- xiv) The full cost of the permitting process should be borne by the applicant.

2) Allow Municipal and/or Town Control

Allow municipal and/or town control over permitting, siting and certain construction and operational parameters in accordance with local land-use regulations, noise ordinances and other local laws. Require disclosure of development plans far enough in advance to allow for planning and bonding for bridge and roadway use.

3) Baseline Water Testing

Require independent baseline water quality testing of potentially impacted public and private drinking water sources, financed by energy companies.

4) Complete Public Disclosure of Chemicals

Require complete public disclosure of the composition of fracturing fluids (including concentrations) and drilling wastewater constituents (as determined by analytical testing) that are recovered from the hydraulic fracturing process.

5) Fracturing Fluids and Wastewater

Require closed storage and pre-treatment of fracturing fluid and wastewater from natural gas operations. Prohibit open surface storage of fracturing fluid and wastewater from natural gas operations. Storage duration for such waste water must be controlled by a permitting process for the storage facility. Disposal of such fluids and wastewater must be preceded by approved treatment processes to reduce hazardous components in compliance with the **Federal Water Pollution Control Amendments of 1972**, the **Clean Water Act of 1977** and the **Water Quality Act of 1987**.

6) Protection from Uncontrolled Releases of Gas and Fluids

Mandate setbacks from private and public water sources that are adequate to protect them from uncontrolled releases of gas and hydraulic fluid, which, according to NYSDEC historical spills data, can migrate thousands of feet in minutes. Impose strict reporting requirements for uncontrolled oil and gas releases consistent with New York State Navigation Law.

7) Environmental Remediation

Impose strict financial liability on energy companies for environmental remediation costs. Require energy companies to post performance bonds or acquire pollution clean-up insurance prior to initiating site work. Allow access to New York State's Spills Remediation Fund for emergency clean-up related to natural gas drilling contamination releases.

8) Fiscal Responsibility

New York State residents not directly involved in the exploitation of the natural gas resources of the State and the attendant operations should be "fiscally neutral" in their tax liabilities. These drilling and production operations should be self-sustaining through the cost of permits, fees and taxes to the State and locales in which the gas drilling and production is taking place. For example, the permit fee structure to finance adequate staffing at NYSDEC to handle the permitting and monitoring of the natural gas drilling operations. The cost of training of local emergency response personnel to support drilling operations should be handled through fees and taxes which are returned to the appropriate emergency support groups.

9) NYS Evaluation of Program

Before allowing drilling to proceed, NYS should conduct a comprehensive analysis of statewide impacts of natural gas development, using a “full build-out” scenario based on the maximum allowable wells per acre and share the results publically.

Summary

The risks and liabilities associated with the techniques of horizontal drilling and hydraulic fracturing of underground deposits of natural gas can only be identified through the experience of such drilling in other parts of the country, for example in Wyoming, Colorado, Texas and Pennsylvania. The problems that have arisen in these drilling experiences are problems that New York State should avoid when drilling is permitted. Our association’s attempt to lay down some minimum criteria for such drilling is a first cut at addressing some of the problems experienced in other states. It is undoubtedly an incomplete list and as our knowledge and understanding of the process and its experience develops, these requirements may be revised.

Our association is encouraged by proposed actions in the New York State Legislature such as the bill introduced by Assemblyman Brennan (A 8748) and Senator Duane (S 6244), which propose many controls on the drilling process that will assure environmental protection. While the bills are focused on the New York City watershed, the principles embodied in this proposed legislation should apply across the entire State of New York.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

FEB 26 2010

Edwin Przybylowicz, Chairman
Seneca Lake Pure Waters Association
Marcellus Shale Committee
P.O. Box 247
Geneva, NY 14456

Dear Mr. Przybylowicz:

Thank you for your February 5, 2010 letter providing the Environmental Protection Agency (EPA) with your Association's "Proposed Minimum Requirements for the Protection of the Seneca Lake Watershed." I understand that this document provides the ideas of your organization with regard to achieving environmentally and fiscally responsible drilling for natural gas in the Marcellus Shale within the Seneca Lake Watershed. I will share this information with my staff and with other offices of the EPA that are studying the use of hydraulic fracturing in natural gas drilling.

I greatly appreciate your thoughtful approach to this complex issue as well as your willingness to work with other stakeholders to find a means of protecting the quality of water resources in the State of New York, attaining economic benefit for its residents, and striving for energy independence for the nation. I hope you will continue to share Seneca Lake Pure Waters Association's comments with EPA.

Sincerely,

A handwritten signature in black ink that reads "Judith A. Enck". The signature is written in a cursive style.

Judith A. Enck
Regional Administrator



November 3, 2009

EDITORIAL

The Halliburton Loophole

Among the many dubious provisions in the 2005 energy bill was one dubbed the Halliburton loophole, which was inserted at the behest of — you guessed it — then-Vice President Dick Cheney, a former chief executive of Halliburton.

It stripped the Environmental Protection Agency of its authority to regulate a drilling process called hydraulic fracturing. Invented by Halliburton in the 1940s, it involves injecting a mixture of water, sand and chemicals, some of them toxic, into underground rock formations to blast them open and release natural gas.

Hydraulic fracturing has been implicated in a growing number of water pollution cases across the country. It has become especially controversial in New York, where regulators are eager to clear the way for drilling in the New York City watershed, potentially imperiling the city's water supply. Thankfully, the main company involved has now decided not to go ahead.

The safety of the nation's water supply should not have to rely on luck or the public relations talents of the oil and gas industry. Thanks in part to two New Yorkers — Representative Maurice Hinchey and Senator Charles Schumer — Congress last week approved a bill that asks the E.P.A. to conduct a new study on the risks of hydraulic fracturing. An agency study in 2004 whitewashed the industry and was dismissed by experts as superficial and politically motivated. This time Congress is demanding “a transparent, peer-reviewed process.”

An even more important bill is waiting in the wings. Cumbersomely named the Fracturing Responsibility and Awareness of Chemicals Act, it would close the loophole and restore the E.P.A.'s rightful authority to regulate hydraulic fracturing. It would also require the oil and gas industry to disclose the chemicals they use.

The industry argues that the chemicals are proprietary secrets and that disclosing them would hurt their competitiveness. It also argues that the process is basically safe and that regulating it would deter domestic production. But if hydraulic fracturing is as safe as the industry says it is, why should it fear regulation?

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